PRELIMINARY

Self Diagnosis Supported model

SERVICE MANUAL

DX-1A CHASSIS

MODEL	COMMANDER	DEST	CHASSIS NO.
KV-32XBR400	RM-Y174	US	SCC-S47A-A
KV-32XBR400	RM-Y174	CND	SCC-S48A-A
KV-36XBR400	RM-Y174	US	SCC-S47B-A
KV-36XBR400	RM-Y174	CND	SCC-S48B-A
KV-38DRC1	RM-Y174	E	SCC-S49A-A
KV-38DRC1C	RM-Y174	E	SCC-S49B-A

SONY®

SPECIFICATIONS

	KV-32XBR400	KV-36XBR400	KV-38DRC1/ KV-38DRC1C
Power requirements	120V, 60 Hz	120V, 60 Hz	220V, 50/60Hz
Number of inputs/outputs			
Video [1]	4		
S Video [2]	3		
Y,PB,PR [3]	2		
Audio [4]	5		
Audio Out [5]	2		
Monitor Out	1		
TV Out [1] [4]	1		
Control-S (in/out)	YES		
Speaker output(W)	15W x 2		
Power Consumption(W)			
In use(Max)	245W		
In standby	2W		
Dimensions(W/H/D)			
(mm)	898 x 678 x 579.5	994 x 754.5 x 622	
(in)	35 3/8 x 26 3/4 x 27 7/8	39 9/64 x 29 45/64 x 24 1/2	
Mass			
(kg)	84kg	108kg	
(lbs)	185 lbs	238 lbs	

Television system

American TV standard/NTSC

Channel coverage

VHF:2-13/UHF:14-69/CATV:1-125

Visible screen size

FD Trinitron tube

1) 1 Vp-p 75 ohms unbalanced, sync negative
2) Y: 1 Vp-p 75 ohms unbalanced, sync negative
   C: 0.286 Vp-p (Burst signal), 75 ohms
3) 500mVrms (100% modulation), impedance: 47kilohms
4) More than 408 mVrms at the maximum volume setting (variable)
   More than 408 mVrms (fix)
5) Y: 1.0 Vp-p, 75 ohms, sync negative;
   PB: 0.7 Vp-p, 75 ohms;
   PR: Vp-p, 75 ohms

Visible screen size

32” picture measured diagonally (KV-32XBR400)
36” picture measured diagonally (KV-36XBR400/38DRC1/38DRC1C)

Actual screen size

34” picture measured diagonally (KV-32XBR400)
38” picture measured diagonally (KV-36XBR400/38DRC1/38DRC1C)

Antenna

75 ohm external antenna terminal for VHF/UHF

Supplied accessories

Remote Commander RM-Y174
Two Size AA (R6) batteries

Optional accessories

Connecting cables: RK-74A, VMC-810S/820/830HGS, VMC-720M,
VMC-810S/820S, YC-15V/30V, YC-15/30HG, RKG69HG, RKC-515HG
U/V mixer: EAC-66
TV Stand: SU-32FD2, SU-36FD2, SU-32XBR2, SU-36XBR2

Design and specifications are subject to change without notice.

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WARNINGS AND CAUTIONS

CAUTION

SHORT CIRCUIT THE ANODE OF THE PICTURE TUBE AND THE ANODE CAP TO THE METAL CHASSIS, CRT SHIELD, OR CARBON PAINTED ON THE CRT, AFTER REMOVING THE ANODE.

WARNING!!

AN ISOLATION TRANSFORMER SHOULD BE USED DURING ANY SERVICE TO AVOID POSSIBLE SHOCK HAZARD, BECAUSE OF LIVE CHASSIS. THE CHASSIS OF THIS RECEIVER IS DIRECTLY CONNECTED TO THE AC POWER LINE.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS, AND IN THE PARTS LIST ARE CRITICAL FOR SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL FOR SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

ATTENTION!!

APRES AVOIR DECONNECTE LE CAP DE L'ANODE, COURT-CIRCUITER L'ANODE DU TUBE CATHODIQUE ET CELUI DE L'ANODE DU CAP AU CHASSIS METALLIQUE DE L'APPAREIL, OU AU COUCHE DE CARBONE PEINTE SUR LE TUBE CATHODIQUE OU AU BLINDAGE DU TUBE CATHODIQUE.

ATTENTION!!

AFIN D'EVITER TOUT RESQUE D'ELECTROCUTION PROVENANT D'UN CHÁSSIS SOUS TENSION, UN TRANSFORMATEUR D'ISOLEMENT DOIT ETRE UTILISÉ LORS DE TOUT DÉPANNAGE. LE CHÁSSIS DE CE RÉCEPTEUR EST DIRECTEMENT RACCORDÉ À L'ALIMENTATION SECTEUR.

ATTENTION AUX COMPOSANTS RELATIFS A LA SECURITE!!

LES COMPOSANTS IDENTIFIES PAR UNE TRAME ET PAR UNE MARQUE ⚠ SUR LES SCHEMAS DE PRINCIPE, LES VUES EXPLOSEES ET LES LISTES DE PIECES SONT D'UNEIMPORTANCE CRITIQUE POUR LA SECURITE DU FONCTIONNEMENT. NE LES REMPLACER QUE PAR DES COMPOSANTS SONY DONT LE NUMERO DE PIECE EST INDIQUE DANS LE PRESENT MANUEL OU DANS DES SUPPLEMENTS PUBLIES PAR SONY. LES REGLAGES DE CIRCUIT DONT L'IMPORTANCE EST CRITIQUE POUR LA SECURITE DU FONCTIONNEMENT SONT IDENTIFIES DANS LE PRESENT MANUEL. SUIVRE CES PROCEDURES LORS DE CHAQUE REMPLACEMENT DE COMPOSANTS CRITIQUES, OU LORSQU'UN MAUVAIS FONTIONNEMENT SUSPECTE.

SELF-DIAGNOSTIC FUNCTION

The units in this manual contain a self-diagnostic function. If an error occurs, the STANDBY/TIMER LED will automatically begin to flash. The number of times the LED flashes translates to a probable source of the problem. A definition of the STANDBY/TIMER LED flash indicators is listed in the instruction manual for the user's knowledge and reference. If an error symptom cannot be reproduced, the Remote Commander can be used to review the failure occurrence data stored in memory to reveal past problems and how often these problems occur.

Diagnostic Test Indicators

When an error occurs, the STANDBY/TIMER LED will flash a set number of times to indicate the possible cause of the problem. If there is more than one error, the LED will identify the first of the problem areas.

Results for all of the following diagnostic items are displayed on screen. No error has occurred if the screen displays a "0".

Diagnostic Item/Description	No. of times STANDBY/TIMER lamp flashes	Self-diagnostic Display/ Diagnostic result	Probable Cause Location	Detected Symptoms
Power does not turn on	Does not light		• Power cord is not plugged in. • Fuse is burned out. (F5501)	• Power does not come on. • No power is supplied to the TV. • AC power supply is faulty.
+B overcurrent (OCP) (see Note 1)	2 times	2:0 or 2:1	• H.OUT (Q5030) is shorted. (D board) • +B PWM (Q5003) is shorted. (D board) • IC9001,9002, 9003 is shorted. (C board)	• Power does not come on. • Load on power line is shorted.
+B overvoltage (OVP)	3 times	3:0 or 3:1	• IC6505 is faulty. (D Board)	• Has entered standby mode.
Vertical deflection stopped	4 times	4:0 or 4:1	• +/-15V is not supplied. (D board) • IC 5004 is faulty. (D board)	• Has entered standby state after horizontal raster. • Vertical deflection pulse is stopped. • Power line is shorted or power supply is stopped.
White balance failure (not balanced)	5 times	5:0 or 5:1	• Video OUT (IC9001-9003) is faulty. (C board) • CRT Drive (IC201) is faulty. (A Board) • G2 is improperly adjusted. (see Note 2)	• No raster is generated. • CRT cathode current detection reference pulse output is small

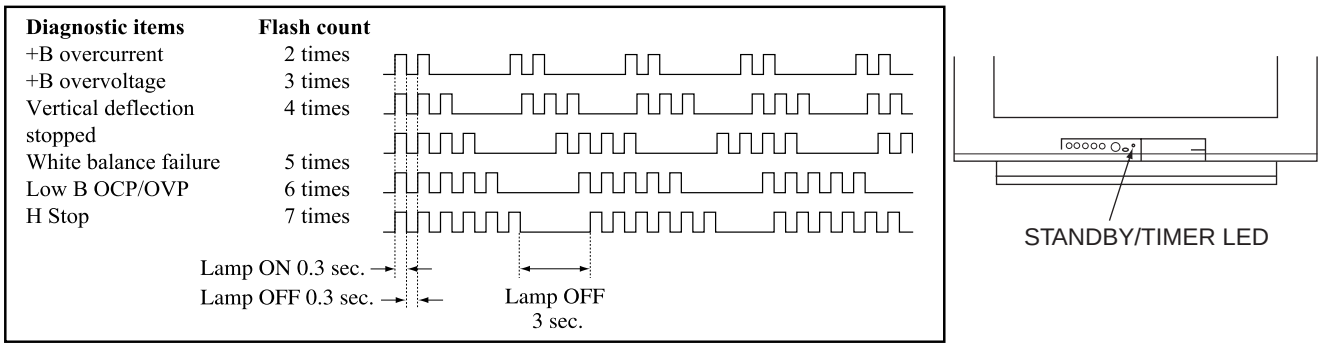
Diagnostic Item/Description	No. of times STANDBY/TIMER lamp flashes	Self-diagnostic Display/ Diagnostic result	Probable Cause Location	Detected Symptoms
LOW B OCP/OVP (overcurrent/overvoltage) (see Note 3 below)	6 times	6:0 or 6:1	• +5 line is overloaded. (A, B Boards) • +5 line is shorted. (A, B Boards) • IC6007 is faulty. (A Board)	• No picture
H-Stop	7 times	7:0 or 7:1		• No picture

Note 1: If a +B overcurrent is detected, stoppage of the vertical deflection is detected simultaneously. The symptom that is diagnosed first by the microcontroller is displayed on screen.

Note 2: Refer to Screen (G2) Adjustment in Section 3-4 of this manual.

Note 3: If standby lamp flashes 6 times, unplug unit and wait ten seconds before performing adjustment.

Display of Standby/Timer LED Flash Count



*One flash count is not used for self-diagnostic.

Stopping the Standby/Timer LED Flash

Turn off the power switch on the TV main unit or unplug the power cord from the outlet to stop the STANDBY/TIMER LAMP from flashing.

Self-Diagnostic Screen Display

For errors with symptoms such as “power sometimes shuts off” or “screen sometimes goes out” that cannot be confirmed, it is possible to bring up past occurrences of failure on the screen for confirmation.

To Bring Up Screen Test

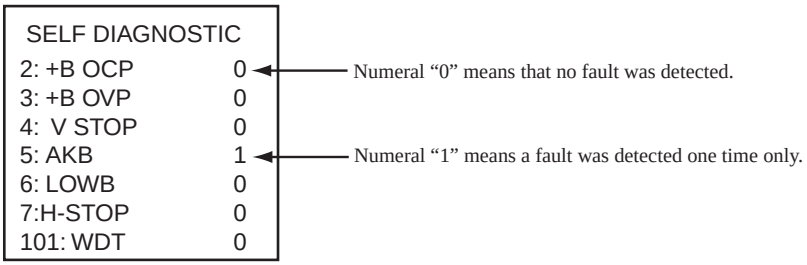
In standby mode, press buttons on the Remote Commander sequentially, in rapid succession, as shown below:

Display ➡ Channel 5 ➡ Sound volume − ➡ Power ON

⇧

Note that this differs from entering the service mode (sound volume +).

Self-Diagnostic Screen Display


SELF DIAGNOSTIC
2: +B OCP 0
3: +B OVP 0
4: V STOP 0
5: AKB 1
6: LOWB 0
7:H-STOP 0
101: WDT 0
Numeral “0” means that no fault was detected.
Numeral “1” means a fault was detected one time only.

Handling of Self-Diagnostic Screen Display

Since the diagnostic results displayed on the screen are not automatically cleared, always check the self-diagnostic screen during repairs. When you have completed the repairs, clear the result display to “0”.

Unless the result display is cleared to “0”, the self-diagnostic function will not be able to detect subsequent faults after completion of the repairs.

Clearing the Result Display

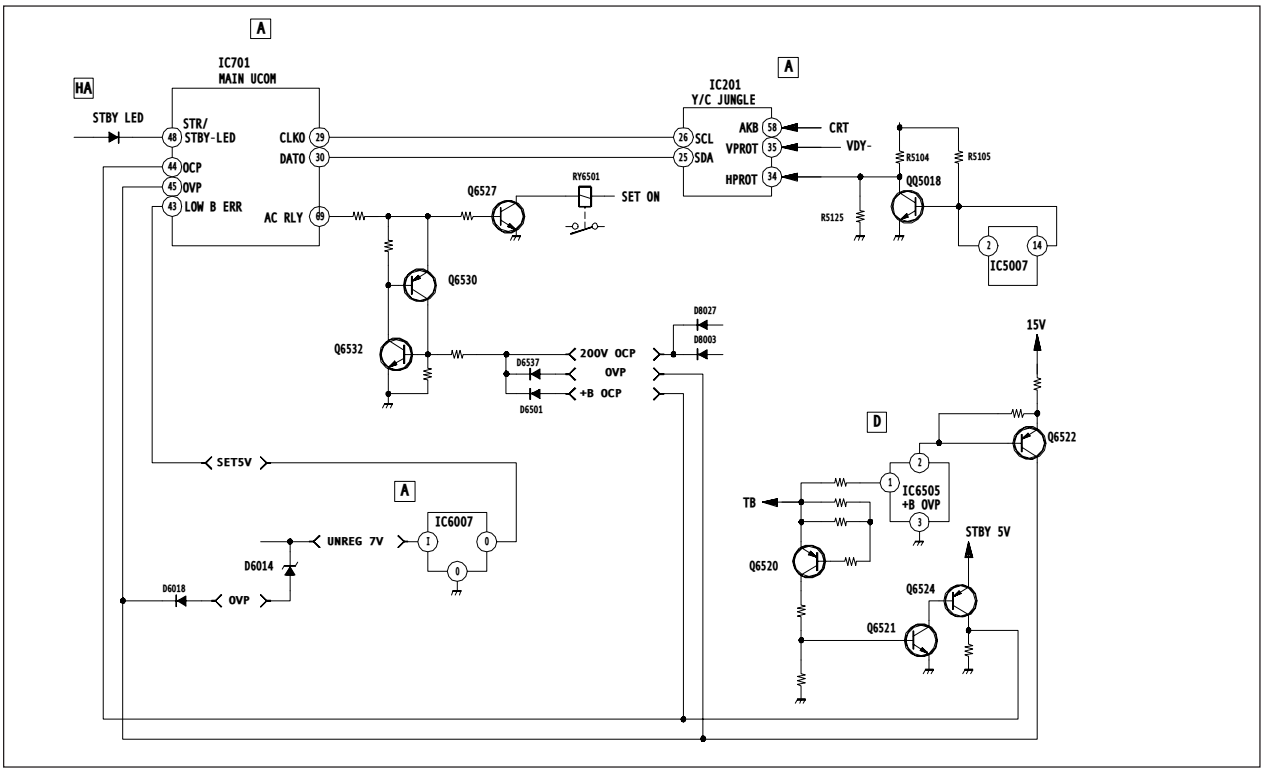
To clear the result display to “0”, press buttons on the Remote Commander sequentially when the diagnostic screen is displayed, as shown below:

Channel [8] ➡ [ENTER]

Quitting the Self-Diagnostic Screen

To quit the entire self-diagnostic screen, turn off the power switch on the Remote Commander or the main unit.

Self-Diagnostic Circuit



+B overcurrent (OCP) — Occurs when an overcurrent (more than 6A) on the +B (135V) line is detected by R6598/ R6591. It will cause Q6520 to turn on and force the AC relay to turn off through Q6532 and Q6530.

+B overvoltage (OVP) — Occurs when one overvoltage (more than +140V) on the +B (135V) line is detected by IC6505 or an overvoltage (more than 0.5V) on the unregulator 7V line is detected by D6014. The AC Relay will turn off through Q6532 and Q6530.

Vertical Deflection Stopped — Occurs when an absence of the vertical deflection pulse is detected by IC1305. Power supply will shut down when waveform interval exceeds 2 seconds.

White Balance Failure — If the RGB levels do not balance within 2 seconds after the power is turned on, this error will be detected by IC3005. The unit will stay on, but there will be no picture.

*(Refers to the RGB levels of the AKB detection Ref pulse that detects 1K).

Low B OCP/Error — Occurs when set 5V is out.

H-Stop

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or touching high-wattage resistors.
3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.
4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
5. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
6. Check the line cords for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
7. Check the B+ and HV to see if they are specified values. Make sure your instruments are accurate; be suspicious of your HV meter if sets always have low HV.
8. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

Leakage Test

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instructions.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low voltage scale. The Simpson's 250 and Sanwa SH-63TRD are examples of passive VOMs that are suitable. Nearly all battery-operated digital multimeters that have a 2 VAC range are suitable (see Figure A).

How to Find a Good Earth Ground

A cold-water pipe is a guaranteed earth ground; the cover-plate retaining screw on most AC outlet boxes is also at earth ground. If the retaining screw is to be used as your earth ground, verify that it is at ground by measuring the resistance between it and a cold-water pipe with an ohmmeter. The reading should be zero ohms. If a cold-water pipe is not accessible, connect a 60- to 100-watt trouble- light (not a neon lamp) between the hot side of the receptacle and the retaining screw. Try both slots, if necessary, to locate the hot side on the line; the lamp should light at normal brilliance if the screw is at ground potential (see Figure B).

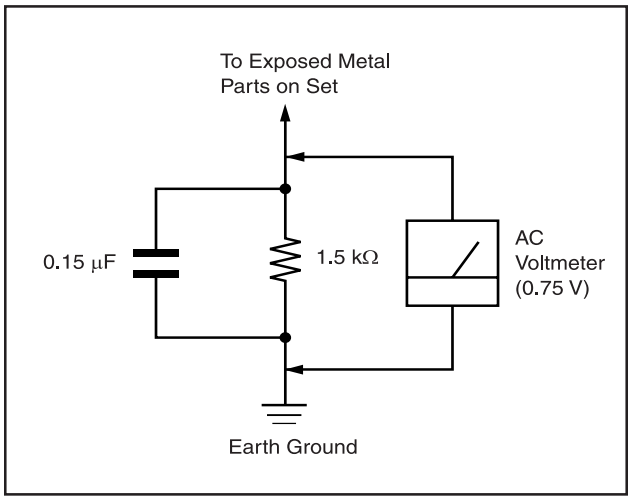


Figure A. Using an AC voltmeter to check AC leakage.

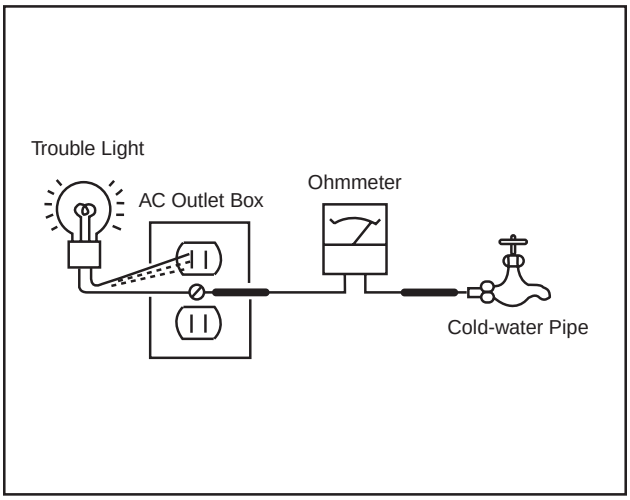


Figure B. Checking for earth ground.

SECTION 1 GENERAL

The instructions mentioned here are partial abstracts from the Operating Instruction Manual. The page numbers shown reflect those of the Operating Instruction Manual.

Using the Remote Control

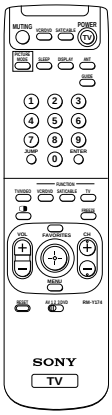
Inserting Batteries

Insert two size AA (R6) batteries (supplied) by matching the + and – on the batteries to the diagram inside the battery compartment.

Remove the batteries to avoid damage from possible battery leakage whenever you anticipate that the remote control will not be used for an extended period.

Handle the remote control with care. Avoid dropping it, getting it wet, or placing it in direct sunlight, near a heater, or where the humidity is high.

Remote Control Overview

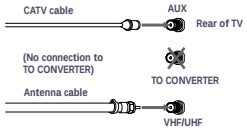


Here's an overview of the buttons on the remote control you will probably use most often. For a complete description of the remote control, see "Using the Remote Control" on page 40.

To Do This ...	*Use This Button*
Turn the TV on and off	TV (POWER)
Select channels directly	0 – 9 and ENTER Press 0 – 9 to select a channel, the channel changes after 2 seconds. Press ENTER for immediate selection.
Scan through channels	CH +/- To scan rapidly through the channels, press and hold down the CH+ or CH- button.
Adjust the volume	VOL +/-
Switch video inputs (such as a VCR)	TV/VIDEO Press repeatedly to toggle through all video inputs.
Display the Menu to make changes to the TV	MENU For details, see "Using the Menus" on page 25.
View the Favorite Channels list	FAVORITES For details, see "Using Favorite Channels" on page 20.
Using the on-screen functions	Move Select

Cable and Antenna

If your cable provider does not feature local channels, you may find this set up convenient.



Select CABLE or antenna (ANT) mode by pressing ANT on the remote control.

In order to receive channels with an antenna, you need to turn your Cable to OFF and perform the Auto Program function (see page 30).

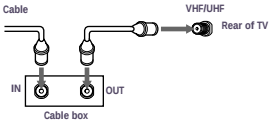
Cable Box Connections

Some pay cable TV systems use scrambled or encoded signals that require a cable box to view all channels.

Cable Box

1 Connect the coaxial connector from your cable service to the cable box's IN jack.

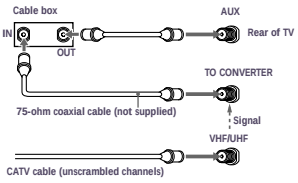
2 Using a coaxial cable, connect the cable box's OUT jack to the TV's VHF / UHF jack.



If you will be controlling all channel selection through your cable box, you should consider using the Channel Fix feature (see page 30).

Cable Box and Cable

For this set up, you can switch between scrambled channels (through your cable box), and normal (CATV) channels by pressing ANT on the remote control.



Your Sony remote control can be programmed to operate your cable box (see "Programming the Remote Control" on page 42).

When using Favorite Channel or Twin View, you cannot view the AUX input in the window picture.

Pressing ANT switches between these inputs.

If you are connecting a cable box through the AUX input and would like to switch between the AUX and normal (CATV) input you should consider using the Channel Fix feature (see page 30).

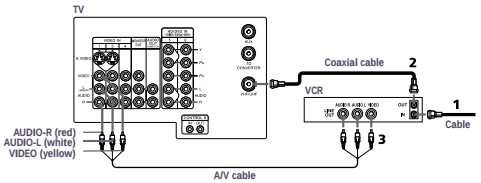
Connecting a VCR and Cable

1 Connect the cable TV cable to the VCR's IN jack.

2 Using a coaxial cable, connect the VCR's OUT jack to the TV's VHF / UHF jack.

3 Using an A / V cable, connect the VCR's A / V OUT jacks to the TV's A / V IN jacks.

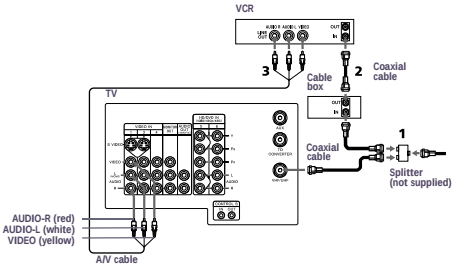
If your VCR has an S VIDEO jack: For best picture quality, use an S VIDEO connection instead of the yellow video cable on your combined A/V cable. Using an S VIDEO cable, connect the VCR's S VIDEO OUT jack to the TV's S VIDEO IN jack. S VIDEO does not provide audio, so audio cables must still be connected to provide sound.



Connecting a VCR and Cable Box

1. Connect the single (input) jack of the splitter to your incoming cable connection, and connect the other two (output) jacks (using coaxial cable) to IN on your cable box and VHF/UHF on your TV.
2. Using a coaxial cable, connect the cable box's OUT jack to the VCR's VHF/UHF IN jack.
3. Using an A/V cable, connect the VCR's A/V OUT jacks to the TV's A/V IN jacks.

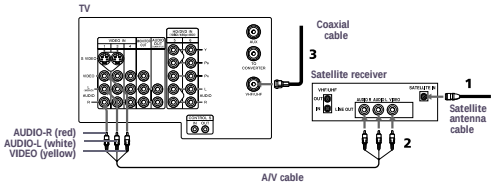
If your VCR has an S VIDEO jack: For best picture quality, use an S VIDEO connection instead of the yellow video cable on your combined A/V cable. Using an S VIDEO cable, connect the VCR's S VIDEO OUT jack to the TV's S VIDEO IN jack. S VIDEO does not provide audio, so audio cables must still be connected to provide sound.



Connecting a Satellite Receiver

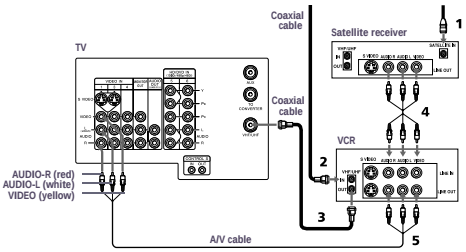
1. Connect the satellite antenna cable to the satellite receiver's SATELLITE IN jack.
2. Using an A/V cable, connect the satellite receiver's A/V OUT jacks to the TV's A/V IN jacks.
3. Connect a coaxial cable from your cable or antenna to the TV's VHF/UHF jack.

If your satellite receiver has an S VIDEO jack: For best picture quality, use an S VIDEO connection instead of the yellow video cable on your combined A/V cable. Using an S VIDEO cable, connect the satellite receiver's VIDEO OUT jack to the TV's S VIDEO IN jack. S VIDEO does not provide audio, so audio cables must still be connected to provide sound.



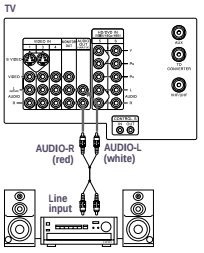
Connecting a Satellite Receiver with a VCR

1. Connect the satellite antenna cable to the satellite receiver's SATELLITE IN jack.
2. Connect the CATV cable to the VCR's VHF/UHF IN jack.
3. Using a coaxial cable, connect the VCR's OUT jack to the TV's VHF/UHF jack.
4. Using an A/V cable, connect the satellite receiver's A/V OUT jacks to the VCR's A/V IN jacks.
5. Using an A/V cable, connect the VCR's A/V OUT jacks to the TV's A/V IN jacks.



Connecting an Audio Receiver

1. Using audio cables, connect the TV's AUDIO OUT jacks to the audio receiver's audio LINE IN jacks.



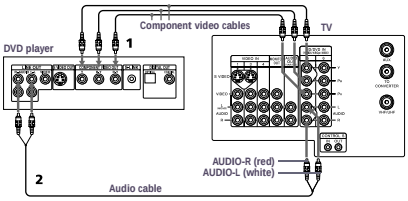
Connecting a DVD Player with Component Video Connectors

1 Using three separate component video cables, connect the DVD player's Y, PB, and PR jacks to the Y, PB, and PR jacks on the TV.

The Y, PB, and PR jacks on your DVD player are sometimes labeled Y, CB, and CR, or Y, B-Y, and R-Y. If so, connect the cables to like colors.

The Y, PB, and PR jacks do not provide audio, so audio cables must be connected to provide sound.

2 Using an audio cable, connect the DVD player's audio OUT jacks to the TV's audio IN jacks.

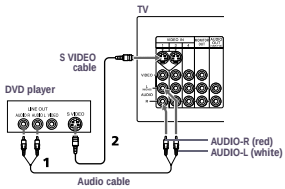


Connecting a DVD Player with A/V Connectors

If your DVD player has video component output connectors: for best picture quality use the connection described on page 15.

1 Using audio cables, connect the DVD player's audio OUT jacks to the TV's audio IN jacks.

2 Using an S VIDEO cable, connect the DVD player's S VIDEO jack to the TV's S VIDEO jack.



Connecting a Digital TV Receiver

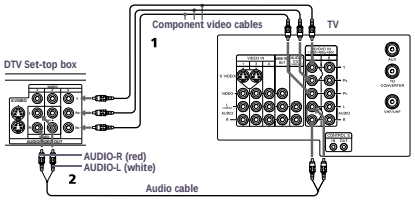
Be sure to read the manual for the Set-top box.

1 Using three separate component video cables, connect the Digital TV Set-top box's Y, PB, and PR jacks to the TV.

The Y, PB, and PR jacks do not provide audio, so audio cables must be connected to provide sound.

Component input (Y, PB, and PR) is recommended for optimum picture quality. You may also use component video or S Video connections.

2 Using an audio cable, connect the DTV Set-top box's audio OUT jacks to the TV's audio IN jacks.

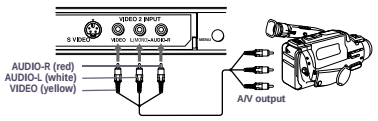


Connecting a Camcorder

1 Using A / V cables, connect the camcorder's A / V OUT jacks to the TV's A / V IN jacks.

If you have a mono camcorder, connect its left audio output to the TV's AUDIO L jack.

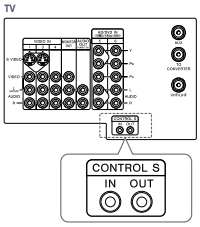
For easy connection of the camcorder, the TV has front A/V inputs (shown below). However, if you prefer, you can also connect the camcorder to the TV's rear A/V IN jacks.



Using the CONTROL S Feature

CONTROL S allows you to control your TV system and other Sony equipment with one remote control.

To control your other Sony equipment with your TV's remote control, use a CONTROL S cable (not supplied) to connect the equipment's CONTROL S IN jack to the TV's CONTROL S OUT jack.



Setting Up the TV Automatically

After you finish connecting your TV, you need to run Auto Setup to set up your channels.

The Auto Setup feature does not apply for installations that use a cable box for all channel selection.

Using Auto Setup

1 Press POWER to turn on the TV.

The first time you turn on the TV, the Auto Setup screen appears.

2 Press CH+ to run Auto Setup or press CH– to exit.

You can run Auto Program by selecting it in the Channel menu, as described on page 30.